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TITLE: Emergency Preservation and Resuscitation for Cardiac Arrest from Trauma  
(EPR-CAT)

PRINCIPAL INVESTIGATOR: Dr. Samuel Tisherman  
Dr. Patrick Kochanek

CONTRACTING ORGANIZATION: University of Pittsburgh  
Pittsburgh, PA 15261

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14. ABSTRACT  During this fourth year of the project our efforts have continued to focus on the regulatory aspects of this clinical trial. We had already successfully obtained an Investigational Device Exemption from the FDA Center for Devices and Radiological Health Office of Device Evaluation and approval of the proposal from the University of Pittsburgh and University of Maryland Institutional Review Boards (IRB) for study enrollment, pending community consultation and public disclosure. We have initiated this process in Pittsburgh. We met with the Pittsburgh Human Relations Commission. They made suggestions regarding the involvement of minorities in the community consultation process. We have placed a survey instrument in trauma clinic and developed a phone survey for the community to comment on the study. We have also developed a simulation training methodology for implementing EPR. The Independent Data Safety and Monitoring Board conducted its annual meeting by conference call in December, 2010. We have completed the paperwork for the USAMRMC Human Research Protection Office to proceed with the formal Department of the Army review.					
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## Introduction

Cardiopulmonary resuscitation (CPR) can save victims of normovolemic cardiac arrest (CA), e.g., ventricular fibrillation. During exsanguination CA from trauma, however, CPR, even with an emergency department (ED) thoracotomy and open chest CPR, doesn't work. *Emergency Preservation and Resuscitation (EPR)* was developed to rapidly preserve the organism during ischemia, using hypothermia, drugs, and fluids, to "buy time" for transport and resuscitative surgery. The purpose of this study is to test the feasibility of rapidly inducing profound hypothermia ( $\leq 10^{\circ}\text{C}$ ) with an aortic flush in trauma victims that have suffered CA and failed standard resuscitative efforts to enable resuscitative surgery and delayed resuscitation with cardiopulmonary bypass. The primary outcome variable will be survival to hospital discharge with minimal neurologic dysfunction.

## **Body**

### **Scientific Progress**

In December, 2009, we conducted the first meeting of the Data and Safety Monitoring Board. The group approved moving forward with the study. They recommended standardization of the transfusion protocols across sites, elimination of blunt trauma victims, and the use of Seldinger technique for aortic cannulation.

Given the complexity of our planned intervention for trauma patients in cardiac arrest, we need to optimize subject inclusion and exclusion criteria. The literature on such patients is scant, with studies focusing on mortality rates and crude information such as signs of life (pulse, breathing, spontaneous movements) in the field or emergency department and admission cardiac rhythm. To better define this patient population to optimize subject selection, we have initiated a retrospective study at several centers to look at other factors that could be quickly determined during the resuscitation of a trauma patient in the emergency department. This retrospective study should produce publishable data, although so far we have not obtained sufficient data to make any conclusions.

Separately, to better profile patients who die from trauma, we have initiated a study of the hemorrhagic shock database of the Resuscitation Outcomes Consortium, which studies prehospital care in patients with life-threatening injuries. We are in the process of analyzing this data, which should add to our understanding of potential candidates for EPR.

### **Administrative and Logistic Matters**

The first regulatory step for proceeding with this study was to obtain an Investigational Device Exemption (IDE) from the Food and Drug Administration (FDA). Our trial is complicated by the fact that both fluids and equipment are to be used for an application that is not currently approved by the FDA. We have now obtained an investigator-sponsored IDE from the FDA Center for Devices and Radiological Health Office of Device Evaluation.

With the approval of the IDE, we were able to obtain approval for the proposal from the University of Pittsburgh Institutional Review Board (IRB) as both the coordinating center and participating site. Similarly, the University of Maryland IRB has approved the study. Both IRB approvals are pending completion of the community consultation process. The investigators at the University of Pennsylvania had been working on agreements with their administration and their cardiothoracic surgeons regarding participation in the study. At present, these matters preclude their involvement in the study.

To begin the community consultation process, we met with the Pittsburgh Human Relations Commission. They made suggestions regarding the involvement of minorities in the community consultation process. We have also placed a survey instrument in trauma clinic and developed a phone survey for the community to comment on the study.

Because Drs. Tisherman and Kochanek are co-authors of a submitted patent for EPR Methods, the University of Pittsburgh Conflict of Interest Committee reviewed the plans for the trial and defined a plan to resolve the conflict so that these researchers could still be involved in the study.

Simultaneously, we have continued the process of human use approval from the USAMRMC. We have completed all the materials they need for their hierarchy to review the study.

**Key Research Accomplishments**

The most important accomplishments this past year have been the initiation of the community consultation process at the University of Pittsburgh. In addition, we have developed a simulation training strategy for the EPR team members to understand their roles.

We have continued to work on gathering the necessary historical data for the study.

**Reportable Outcomes**

As this year's efforts have focused on the regulatory issues, there has not been any new research data to report.

**Conclusion**

Most of the work so far on this project has been focused on the regulatory process. We have an IDE and approval from 2 IRBs. We also have successfully conducted an animal training session and a simulation training session. We now need to complete the community consultation and public disclosure process, as well as further training, so that we can be prepared to initiate patient enrollment in the coming year. We still need to obtain approval from the USAMRMC.

**References**

None